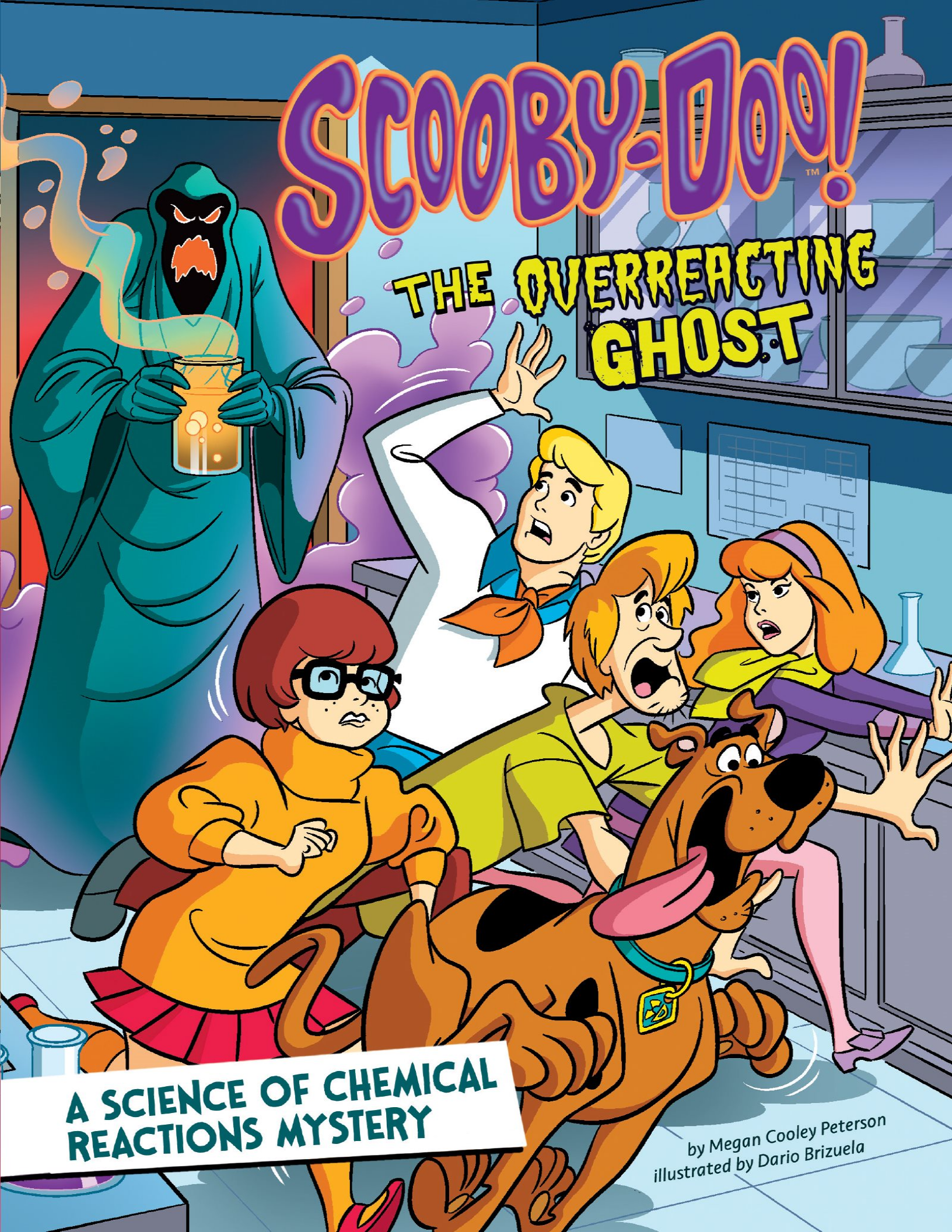
SCOOBY-DOO!™
THE OVERREACTING GHOST
A SCIENCE OF CHEMICAL REACTIONS MYSTERY
by Megan Cooley Peterson
illustrated by Dario Brizuela

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CAPSTONE PRESS
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Scooby- Doo and the gang made volcanoes in science class.

"Here goes nothing, Scoob," said Shaggy. "Let's see what happens when we pour vinegar and baking soda into our volcano."

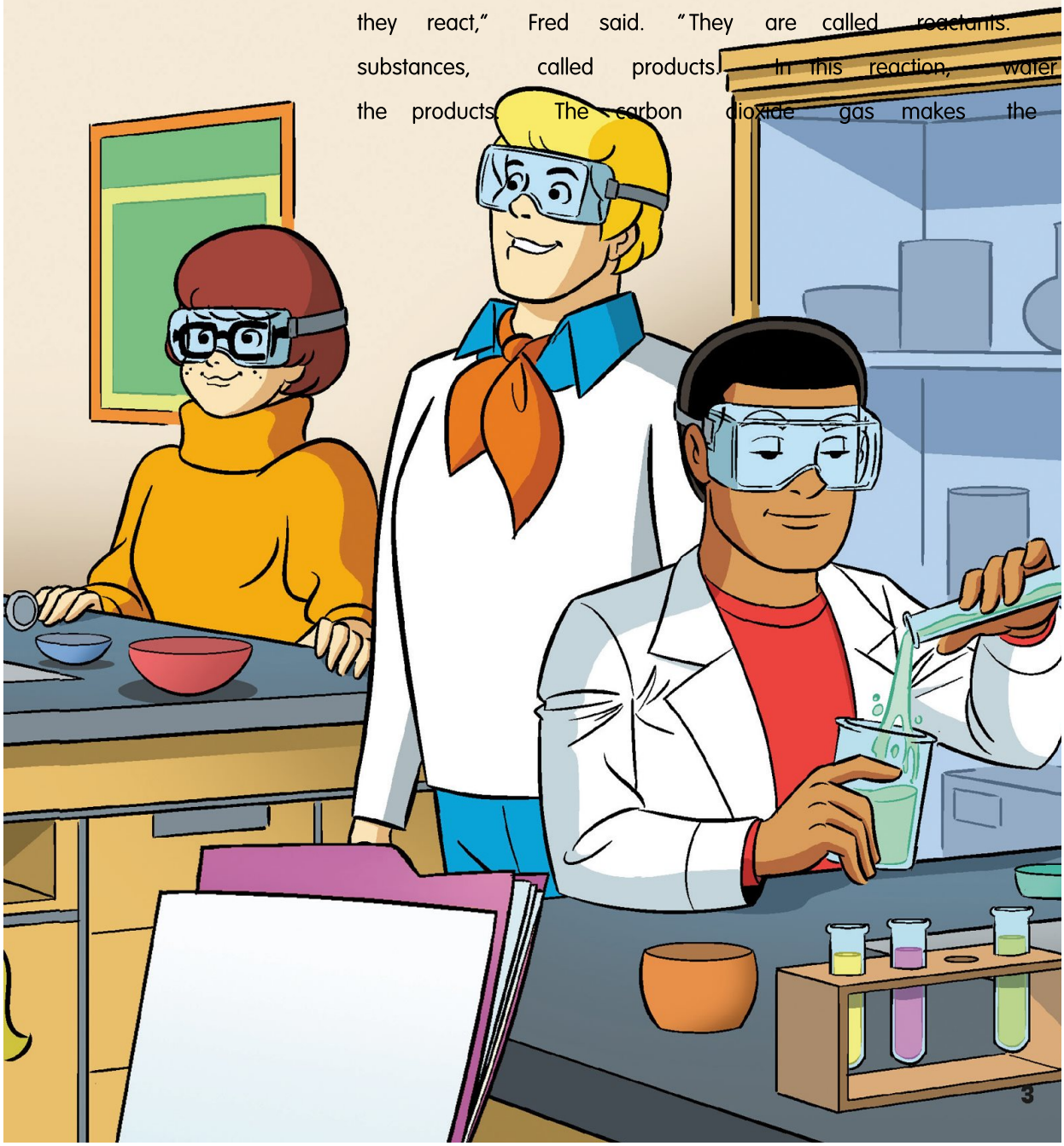
"Rubbles!" exclaimed Scooby.

"Like wow!" Shaggy said. "It's magic!"

"It's not magic," said Daphne. "It's called a chemical reaction."

"Everything in the universe is made of atoms or gr
molecules," added Velma. "A chemical reaction h
between atoms or molecules are formed or broken.

"When certain substances are put together, like vi
they react," Fred said. "They are called reactants.
substances, called products. In this reaction, water
the products. The carbon dioxide gas makes the



FACT FILE

When combined, vinegar and baking soda react spontaneously. But most chemical reactions need energy to get started— activation energy. Heat is one example of activation energy.

"Chemical reactions happen all the time," Daphne said. "Without on Earth could not exist."

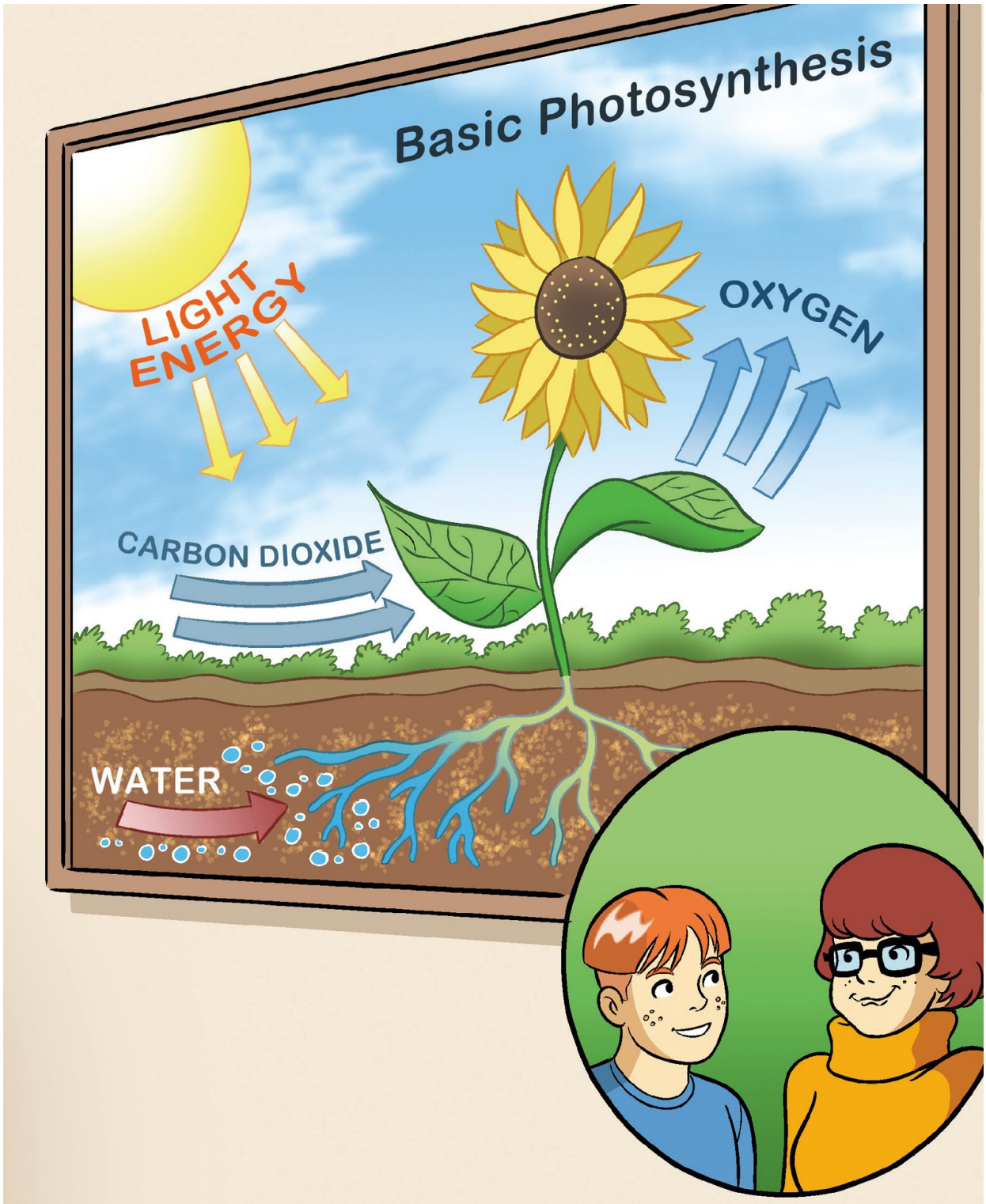
"Look at plants and trees," Velma continued. "Photosynthesis is a reaction."

"Green plants absorb sunlight," explained Fred. "The light energy and water inside the plant into sugar and oxygen."

"The sugar feeds the plant, and the plant releases the oxygen into

"I wonder what chemical reactions we can use to make a hotdog?"

"Ruh!" said Scooby.


Basic Photosynthesis
LIGHT ENERGY
OXYGEN
CARBON DIOXIDE
WATER

A boy in class tapped Velma's arm. "Hey, Velma?"

"Hi, Brian," said Velma. "What's up?"

"Would you like to go to the dance with me on Saturday?"

"I'm working on my science project this weekend," answered
"The science fair is only two weeks away. But thank you fo

"Lunch is my favorite class of the day," said Shaggy. "All reactions made me hungry!"

"Actually," Daphne said, "there are chemical reactions

"There are?" Shaggy asked through a mouthful of food.

Fred nodded. "Chemical reactions in your digestive syste Without chemical reactions, you'd starve."

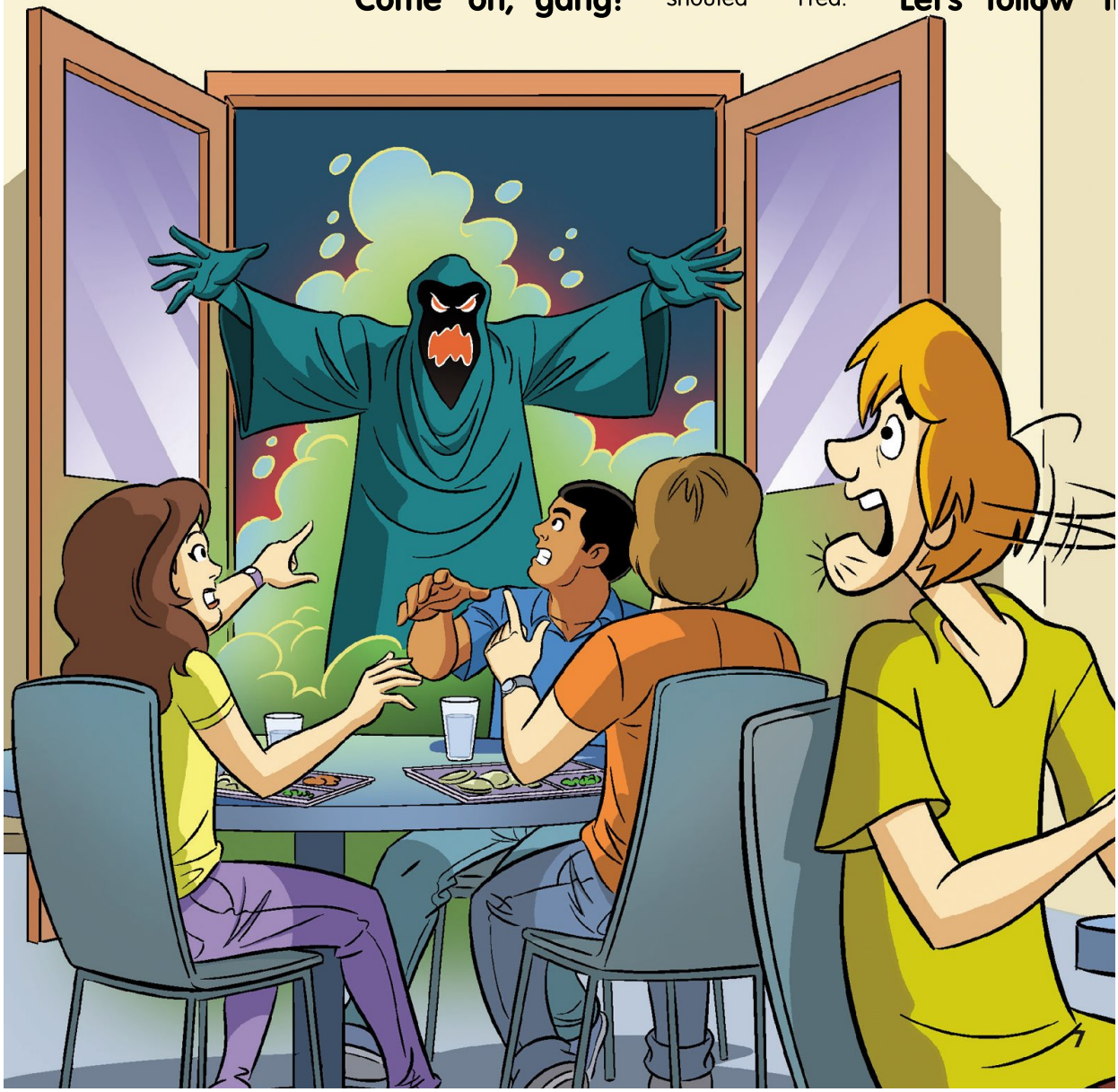
"Rarve?" Scooby exclaimed.

"Enzymes in your stomach and intestines act like catalysts chemical reactions, which turn food into nutrients for yo

"Zoinks!" exclaimed Shaggy. "Is that a **g-g-g-gho**

"The dance is cursed!" moaned the ghost in an eerie
to your doom!" Then the ghost ripped down the danc
down the hall.

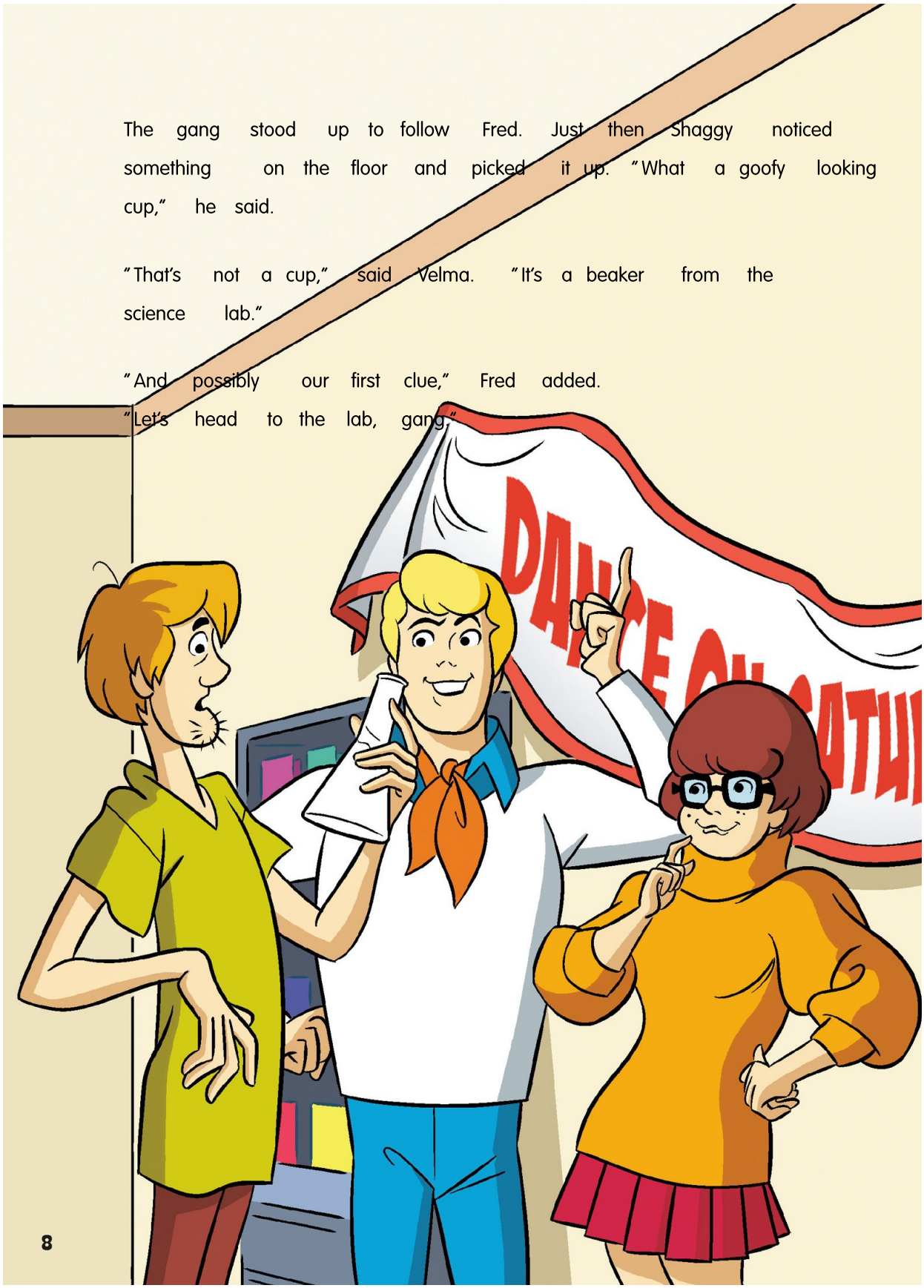
"Come on, gang!" shouted Fred. **"Let's follow t**



The gang stood up to follow Fred. Just then Shaggy noticed something on the floor and picked it up. "What a goofy looking cup," he said.

"That's not a cup," said Velma. "It's a beaker from the science lab."

"And possibly our first clue," Fred added. "Let's head to the lab, gang."



"Someone, or something, has broken all the lab equ

"Rhost!" shouted Scooby.

Shaggy pointed to a strange silhouette. **"It's the gh**
be flunking science class."

"Like, whew," said Shaggy. "It's only Professor Curie."

"What happened, Professor?" Fred asked.

"Someone vandalized my classroom," she answered. "What a mes

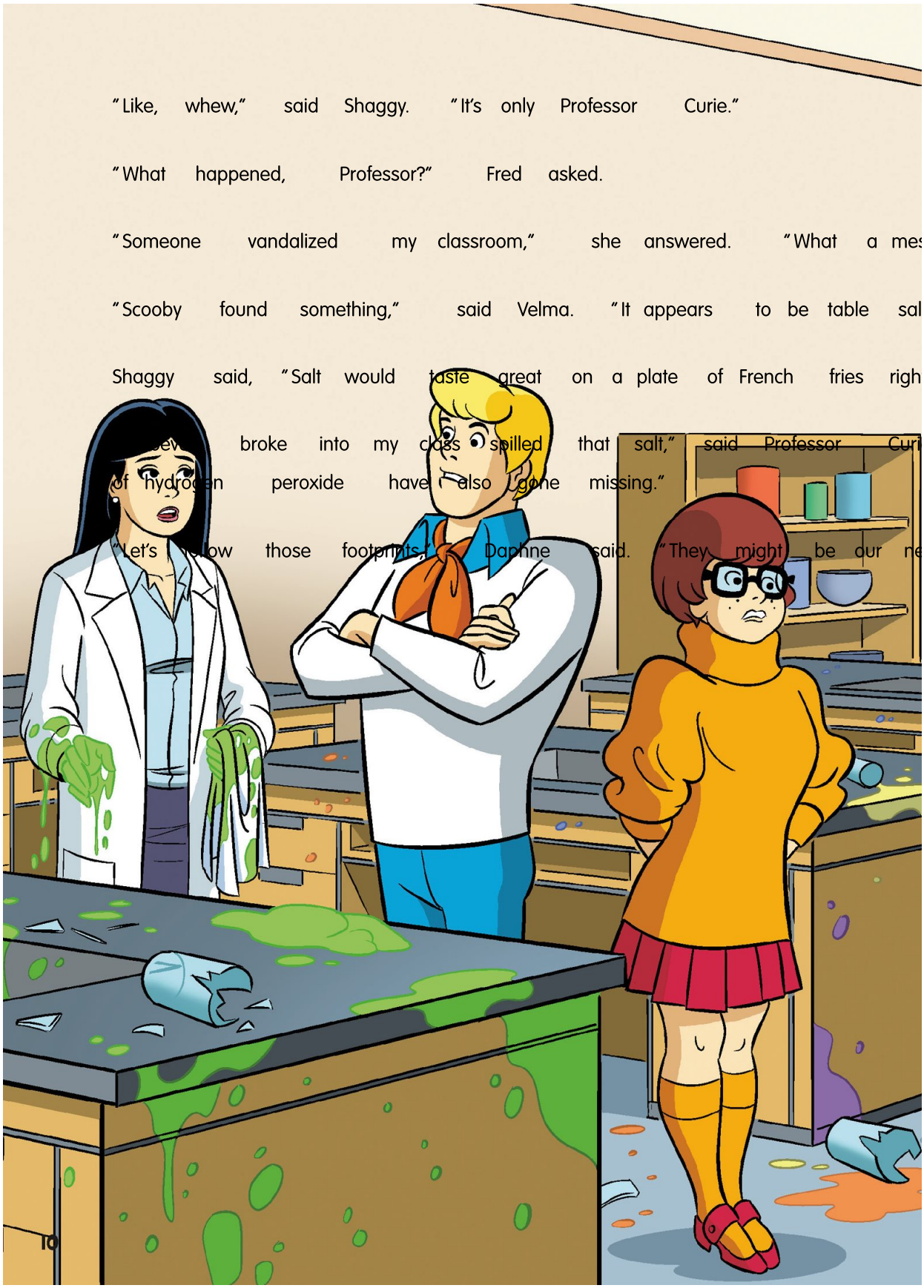
"Scooby found something," said Velma. "It appears to be table sal

Shaggy said, "Salt would taste great on a plate of French fries righ

broke into my class spilled that salt," said Professor Curi

of hydrogen peroxide have also gone missing."

"Let's follow those footprints," Daphne said. "They might be our ne



"The footprints lead into the home economics room," here is long gone."

Shaggy and Scooby sniffed the air. "Mmmm, cake an chemical reactions made these too," joked Shaggy.

"Actually, they did!" said Fred. "All sorts of chemical r bake something."

"Yeast and sugar are often used to make bread," Velr reactants. The yeast eats the sugar and releases the and ethanol. Carbon dioxide bubbles make the bread

"What time should we head to the dance on Saturday?" asked Ve
"I thought you were working on your science project," Daphne sai
"Change of plans," answered Velma. "We've got to catch that gho
at the dance."
"A phantom doing the foxtrot?" gulped Shaggy. "I think I'll leave m
dancing shoes at home."
"Come on gang. Let's go buy our tickets."
14

"Not if the ghoul gets us first!" Shaggy said, pointing.
"Creepers!" exclaimed Daphne. "Follow that ghost!"

The gang ran down the hall after the ghost, but they couldn't catch him.

"What happened?" Fred asked.

"The ghost destroyed my ticket table!" explained the gym teacher. "Maybe we should cancel the dance."

Daphne took a closer look at the table. "This table's been completely rusted!"

"That's a spooky trick he played," said Shaggy.

"It's not a trick, just a chemical reaction," Velma said as she typed on her tablet.

"That again?" Shaggy asked.

"Velma's right," Daphne said. "
and oxygen. When iron rusts,
atoms. This transfer of electrons

"And look," said Shaggy. "There's

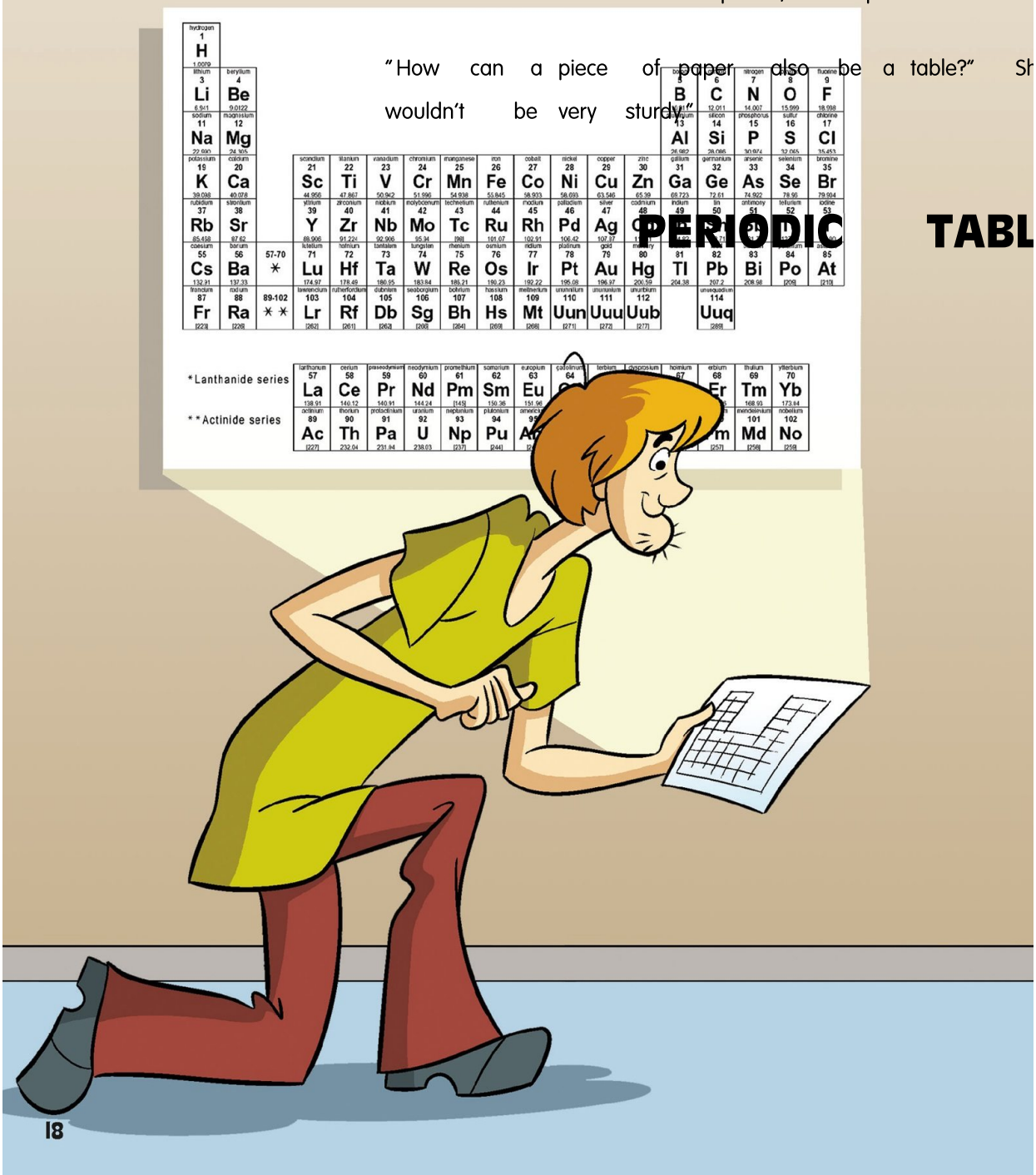
"Rait," agreed Scooby, licking h

"Just as I suspected," Velma sa
using hydrogen peroxide and

"Hey," said Shaggy. "Someone left behind a cros
it's already been solved."

"That's not a crossword puzzle," Daphne said.

"How can a piece of paper also be a table?" Sh
wouldn't be very sturdy."

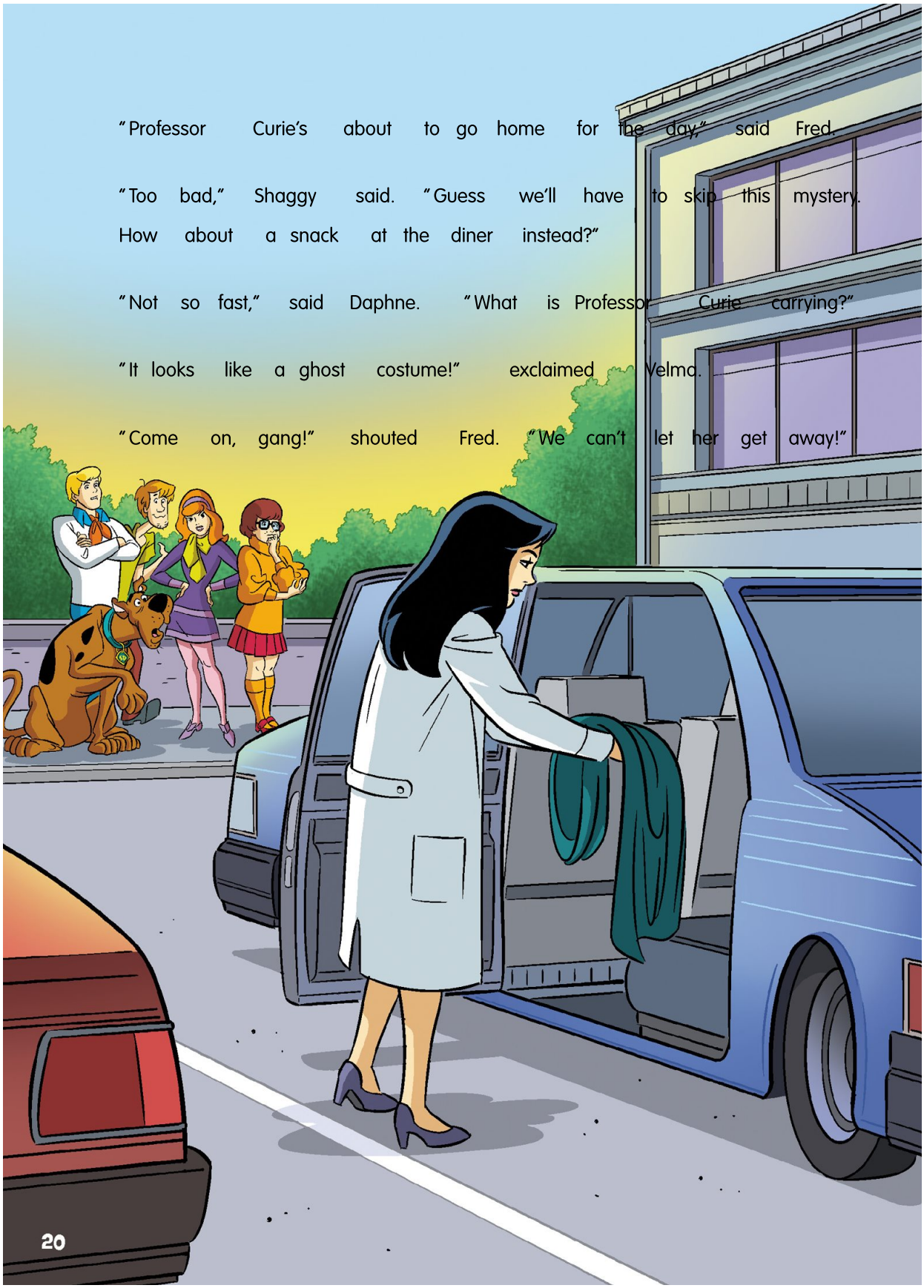


Velma shook
lists 118 known
cannot be brok
and oxygen ar

"Look," said Fred. "There's something written on the back."

"Chapters one and two due on Monday," read Daphne. "It be a homework assignment."

Fred scratched his head. "First the beaker and now the perio table. I think Professor Curie knows more than she's letting



"Professor Curie's about to go home for the day," said Fred.

"Too bad," Shaggy said. "Guess we'll have to skip this mystery. How about a snack at the diner instead?"

"Not so fast," said Daphne. "What is Professor Curie carrying?"

"It looks like a ghost costume!" exclaimed Velma.

"Come on, gang!" shouted Fred. "We can't let her get away!"

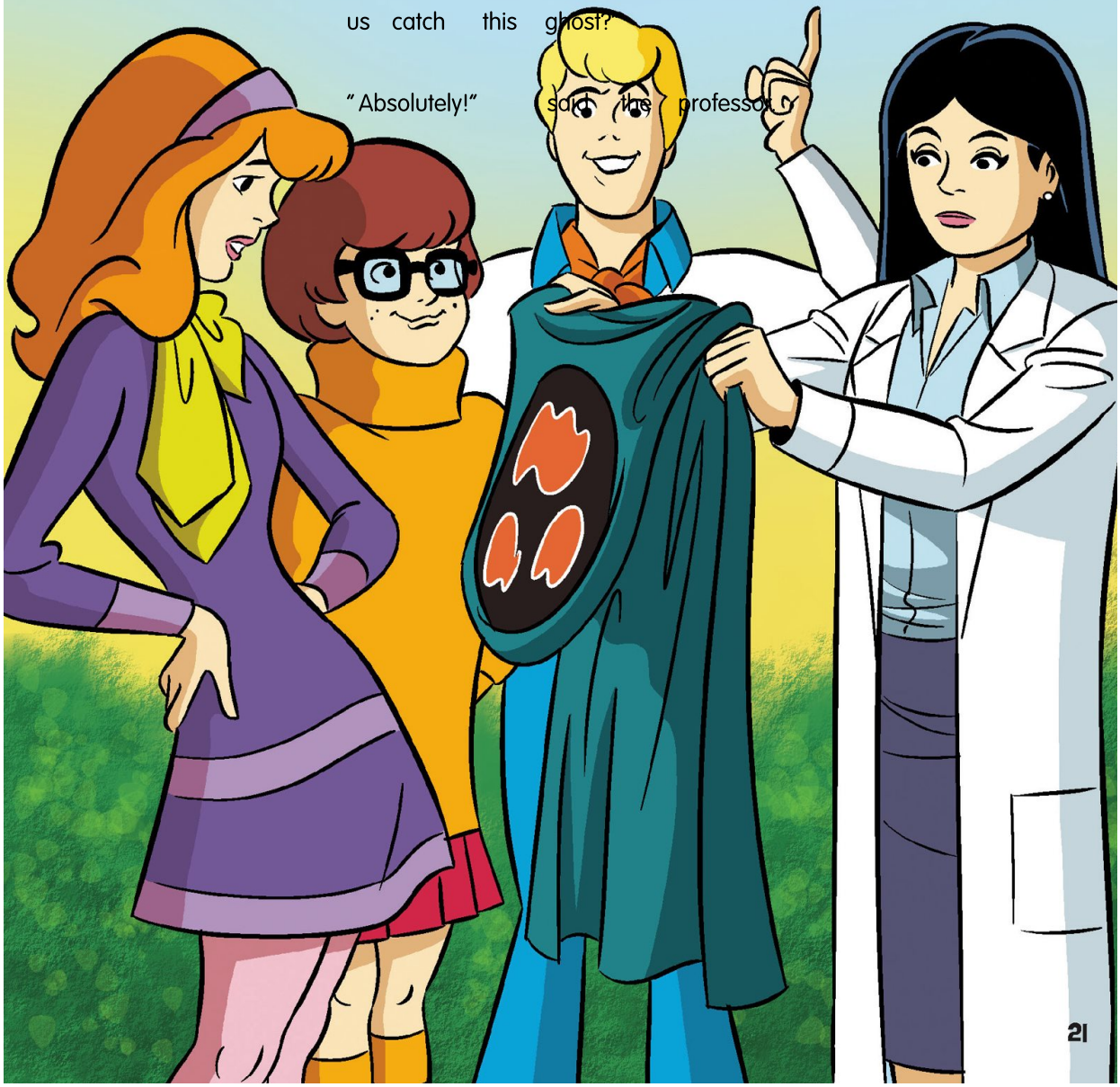
"Professor Curie?" Daphne asked. "Why do you have

"It's not mine— it wouldn't fit me," said the professor.
classroom door. I think it belongs to whoever destroye

"The pieces of this mystery are beginning to react,"

"And I've got a plan," Fred said. "Professor Curie, wo
us catch this ghost?"

"Absolutely!" said the professor.



On Saturday night

"Yikes!" cried Shag
shirt. Guess I have

"Re roo," agreed Sc

"You're not getting
how we can solve

"Please don't say c

"We can use a chem

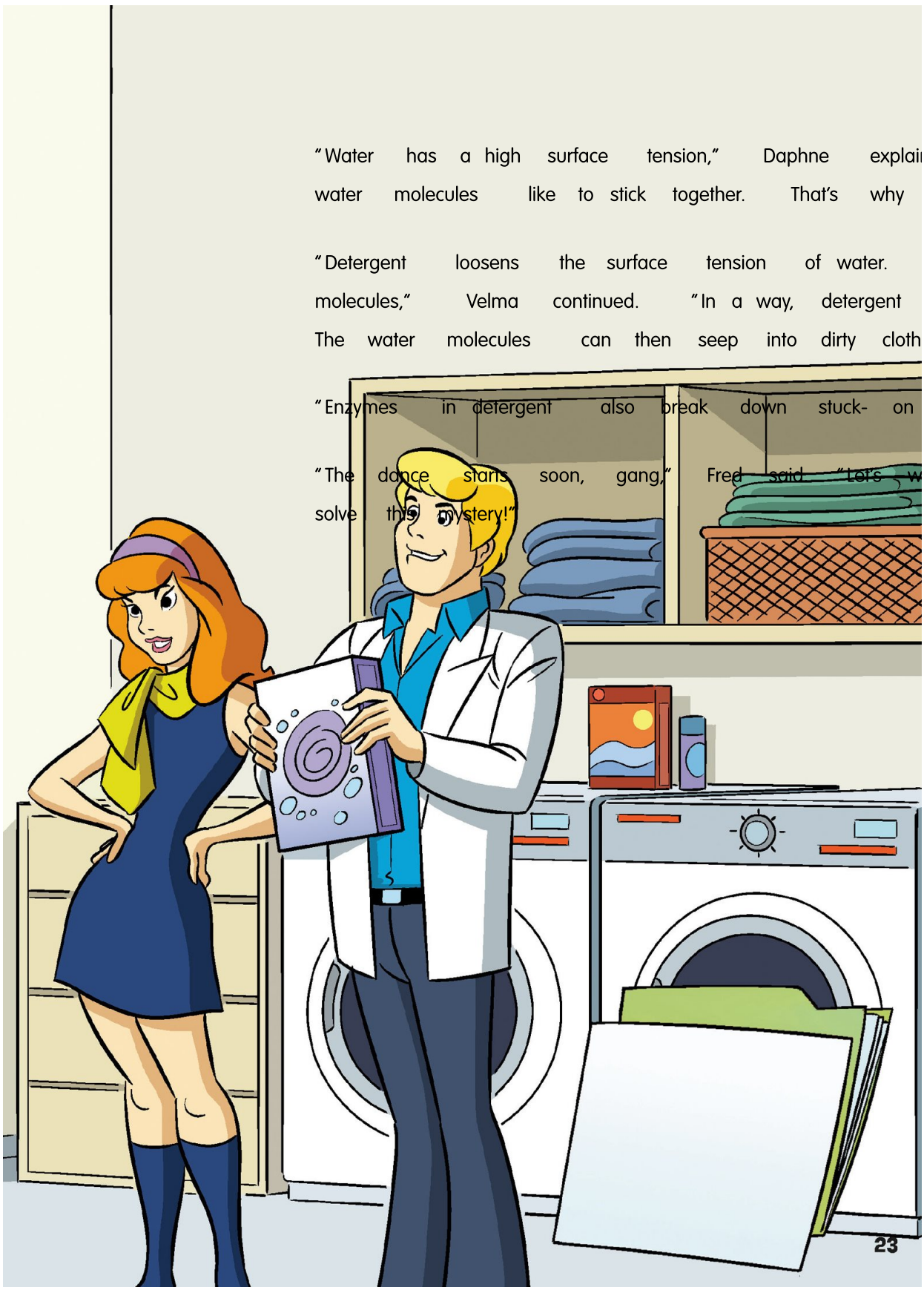
"Velma's right," said
detergent and wate

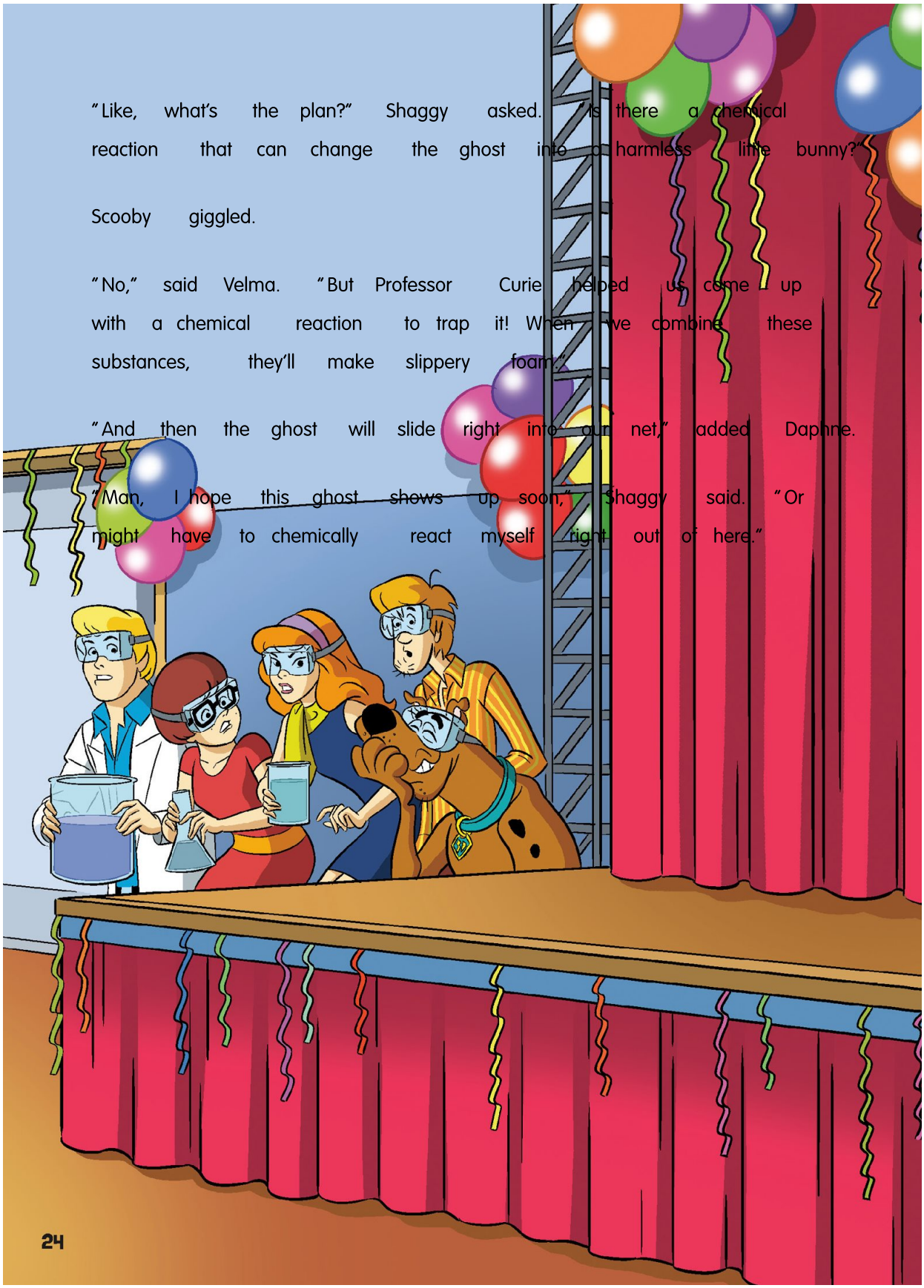
"Water has a high surface tension," Daphne explai
water molecules like to stick together. That's why

"Detergent loosens the surface tension of water.
molecules," Velma continued. "In a way, detergent
The water molecules can then seep into dirty cloth

"Enzymes in detergent also break down stuck- on

"The dance starts soon, gang," Fred said. "Let's w
solve this mystery!"





"Like, what's the plan?" Shaggy asked. "Is there a chemical reaction that can change the ghost into a harmless little bunny?"

Scooby giggled.

"No," said Velma. "But Professor Curie helped us come up with a chemical reaction to trap it! When we combine these substances, they'll make slippery foam."

"And then the ghost will slide right into our net," added Daphne.

"Man, I hope this ghost shows up soon," Shaggy said. "Or might have to chemically react myself right out of here."

"Rhost!"
"Now, g

"Let's see who this ghost really is," Fred said. Scooby pulled off the

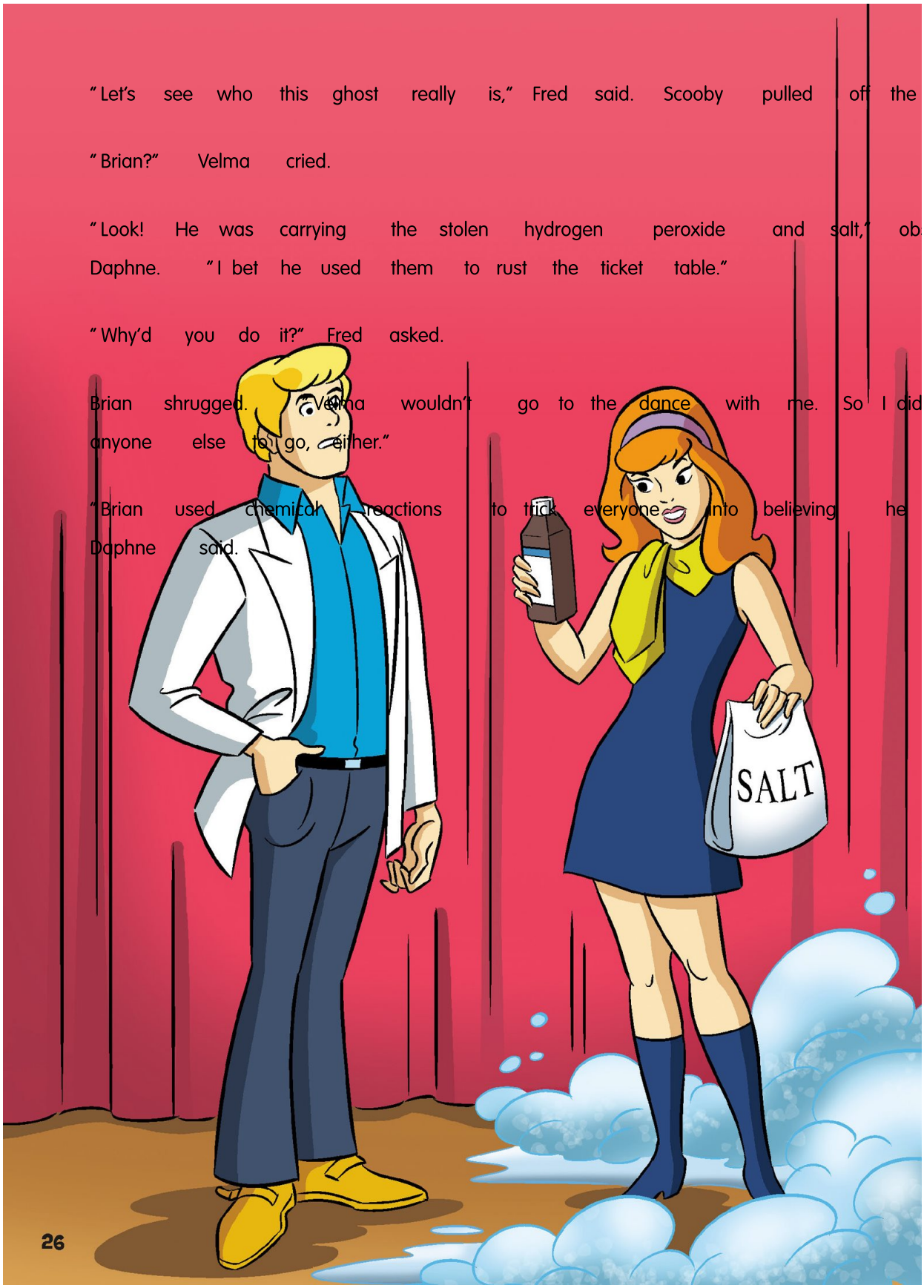
"Brian?" Velma cried.

"Look! He was carrying the stolen hydrogen peroxide and salt," ob
Daphne. "I bet he used them to rust the ticket table."

"Why'd you do it?" Fred asked.

Brian shrugged. "Velma wouldn't go to the dance with me. So I did
anyone else to go, either."

"Brian used chemical reactions to trick everyone into believing he
Daphne said.



"And I would've gotten away with it if it weren't for you meddling classmates!" said Brian.
"I have a question," Shaggy said. "Like, what were you doing the home economics room?"
Brian shrugged. "Pretending to be a ghost is hard work. I got hungry."
"I can relate," said Shaggy. "Now, can we get something to eat
"Yes, Shaggy," Velma said. "We'll whip up a cake at my house."
"Now that is a chemical reaction I could go for!" Shaggy said.
THE END

GLOSSARY

atom (AT-uhm)— the smallest particle of an element

carbon dioxide (KAHR- buhn dy- AHK- syd)— a colorless people and animals breathe out; plants take in carbo need it to live

catalyst (KAT-uh-list)— a substance that speeds up a being used up by the chemical reaction

chemical reaction (KE- muh- kuhl ree- AK- shuhn)— a p substances are made into a new substance or substa

electron (e- LEK- tron)— a tiny particle in an atom that

element (E- luh- muhnt)— a basic substance in chemistr simpler substances

energy (E- nuhr- jee)— the ability to do work, such as r or light

enzyme (EN- zime)— a special protein that speeds up digestion) in the body

ethanol (ETH- uh- nal)— a biofuel made from crops suc

hydrogen peroxide (HYE- druh- juhn puh- ROCKS- eyed) germs; the chemical formula is H_2O_2

molecule (MOL- uh- kyool)— the atoms making up the substance; H_2O is a molecule of water

nutrient (NOO- tree- uhnt)— substances, such as vitami need for good health

photosynthesis (foh- toh- SIN- thuh- siss)— process by v using sunlight, carbon dioxide, and water

tension (TEN- shuhn)— the stress on a structure resultir

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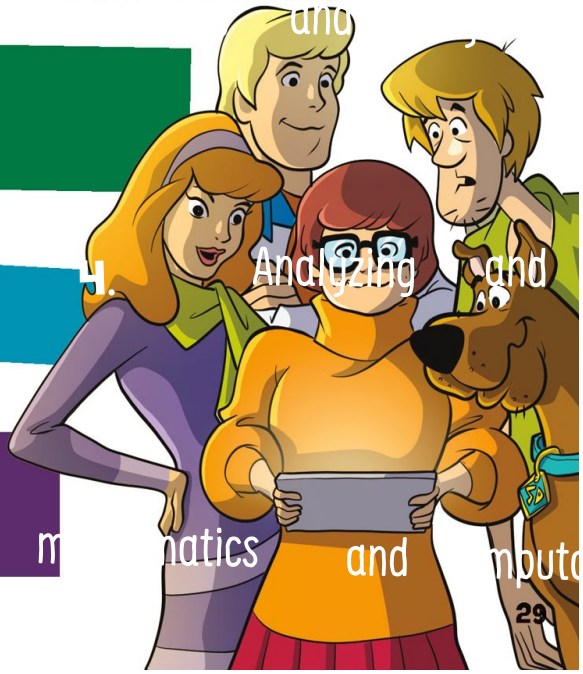

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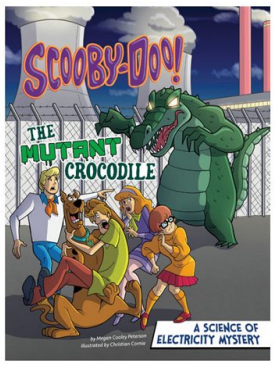
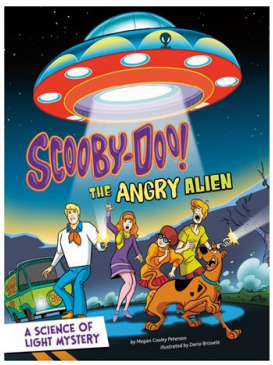
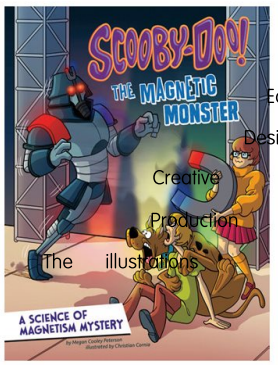
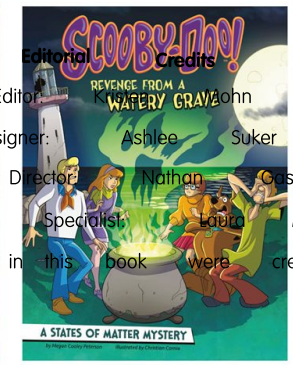
rust, cakes burning in the cooking lab … is the ghost to blame?
spooky mystery and catch the ghost in the act of caus









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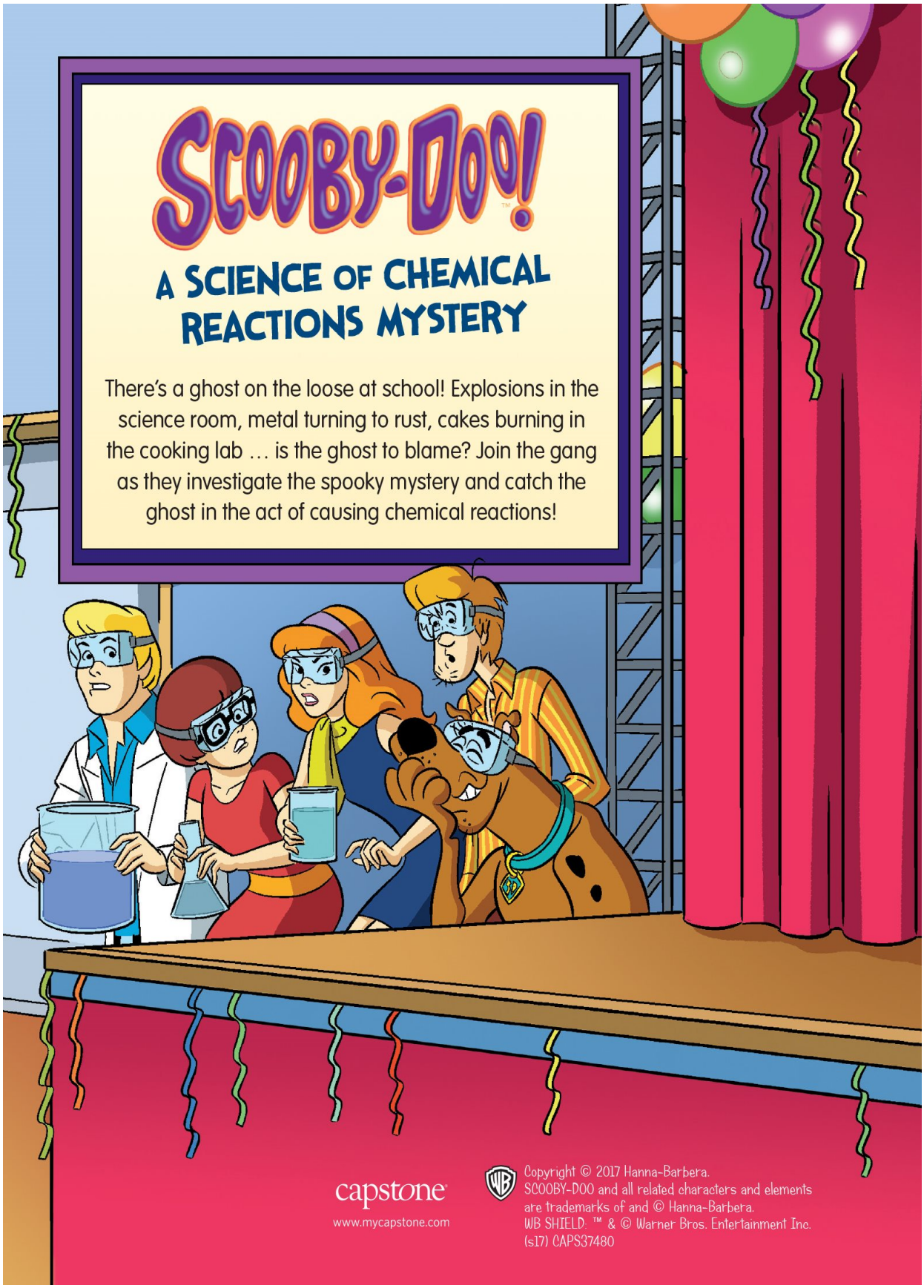
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There's a ghost on the loose at school! Explosions in the science room, metal turning to rust, cakes burning in the cooking lab … is the ghost to blame? Join the gang as they investigate the spooky mystery and catch the ghost in the act of causing chemical reactions!

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